

Milestone innovative technology for improving processing quality, efficiency and speed

MILESTONE



H E L P I N G
P A T I E N T S

... towards the Lean Laboratory concept



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Milestone



- An Italian Corporation in Bergamo
- Since 1988 technology leader in microwave applications for analytical and organic chemistry.
- Started in 1994 to transfer know-how to the field of Histopathology.



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Milestone in the world



Italia - Bergamo
Warehouse



USA Kalamazoo - MI
Milestone Medical

The future of AP?

ASCO/CAP Guideline Recommendations for Human Epidermal Growth Factor Receptor 2 Testing in Breast Cancer, Arch Pathol Lab Med-Vol 131, January 2007

Results:

Approx. 20% of current HER2 testing may be inaccurate

What can be done ?

Pre-analytic

Pre-analytic is any process with an impact on the biospecimen, from the moment it leaves the body of the patient until a histological staining procedure is started.



Milestone tissue-processors



KOS
Rapid manual microwave tissue processor.
Up to 3mm, 45 cassettes.



Histos 3/5
Semiautomatic microwave tissue processor.
Up to 3 or 5mm, 110 cassettes.



LOGOS J
"Personal" hybrid tissue processor



LOGOS
All-in-one hybrid tissue processor



Pathos DELTA
World's first hybrid tissue processor.



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The semi-automatic line



KOS



HISTOS 5

- Rapid Tissue Processing
- Rapid Decalcification
- Special Stains
- Antigen Retrieval
- Gross Hardening
- EM processing



The Automatic line



LOGOS J



LOGOS



Pathos DELTA

- Rapid tissue Processing
- Optimized workflow
- Xylene free



The Milestone line

	 KOS	 Histos 3	 Histos 5	 LOGOS J	 LOGOS	 Pathos Delta
Automatic				✓	✓	✓
Semiautomatic	✓	✓	✓			
Simultaneous dual run		✓	✓	✓	✓	
Specimens number	45	110	110	48	up to 420	up to 300
Tissue thickness	max 3mm	max 3mm	no limit	max 3mm	no limit	no limit
Hybrid (rapid+conventional)				✓	✓	✓

Logos



*Like your conventional.
And more.*



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**Hybrid.
Flexible.
Fast.
Safe.
Economical.**



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Hybrid technology

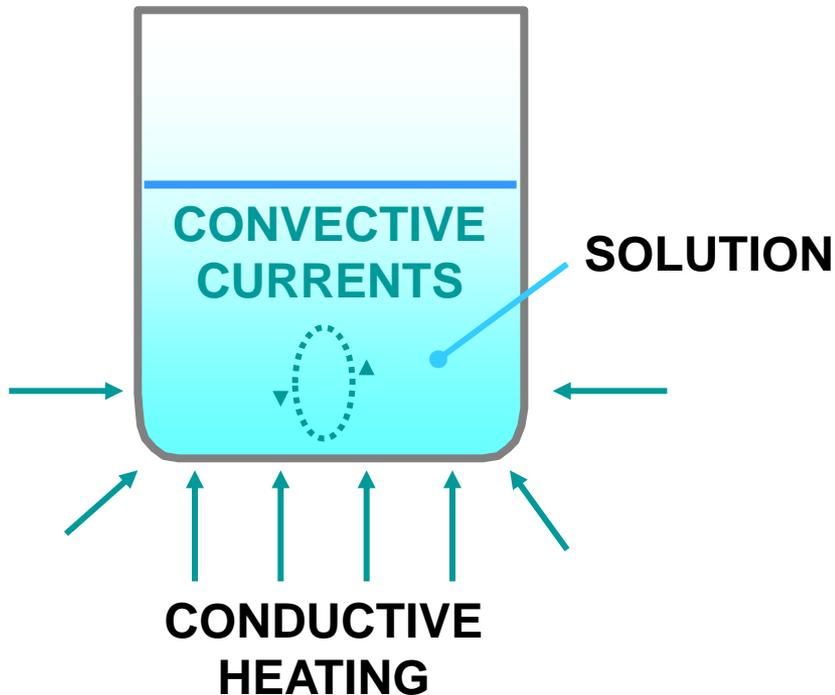


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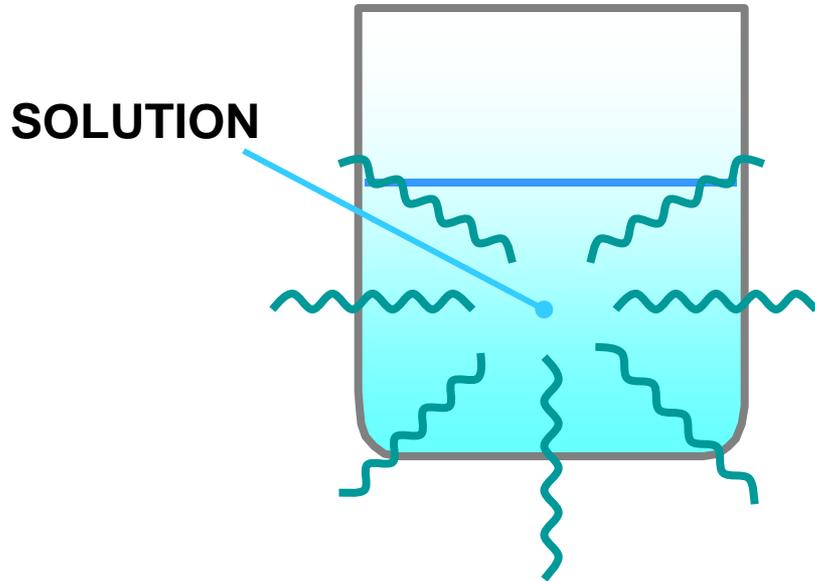
Conventional Heating

The temperature of the outside surface of the vessel is in excess of the boiling point of the solution

Container is heated first, then the solution.

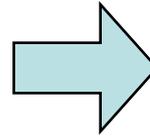


Hybrid heating



HYBRID HEATING

**Volumetric heating
homogeneous**



**Shorter Reaction
Times**

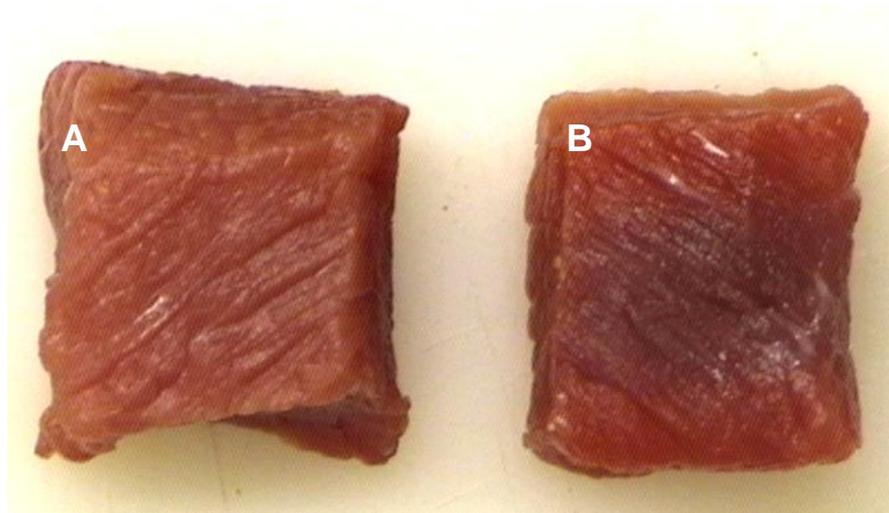


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Hybrid effect

- Experimental proof:

Fresh sample of animal's muscle were sectioned in two mirror blocks , approximately 8cm³ each (20x20x20mm)

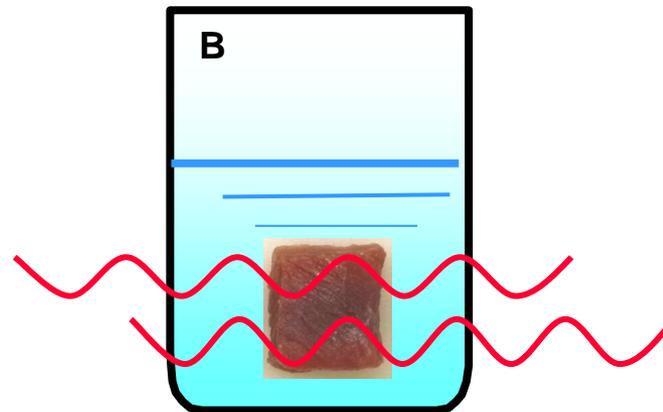
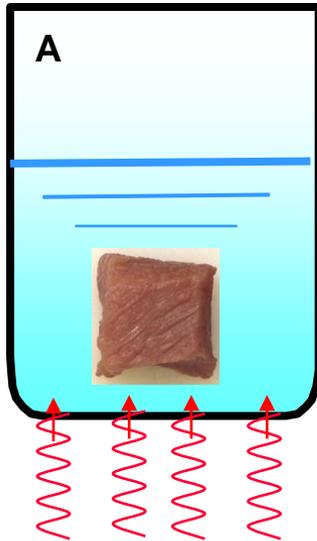


Hybrid effect

Place a beaker containing 100ml Ethanol on an electronic hot plate. Set the temperature at 70°C. When temperature is reached immerse the specimen A in this solution for 5 minutes.

Place a beaker containing 100ml Ethanol in a Milestone tissue processor. Set the temperature at 70°C. When the temperature is reached immerse the specimen B in this solution for 5 minutes.

Hot Plate
Heating

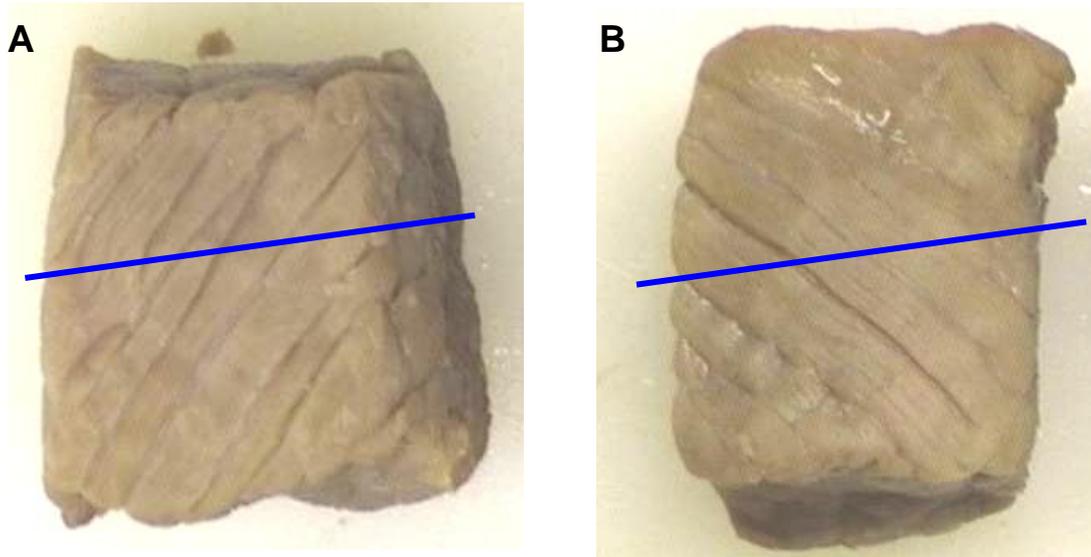


Hybrid
Heating



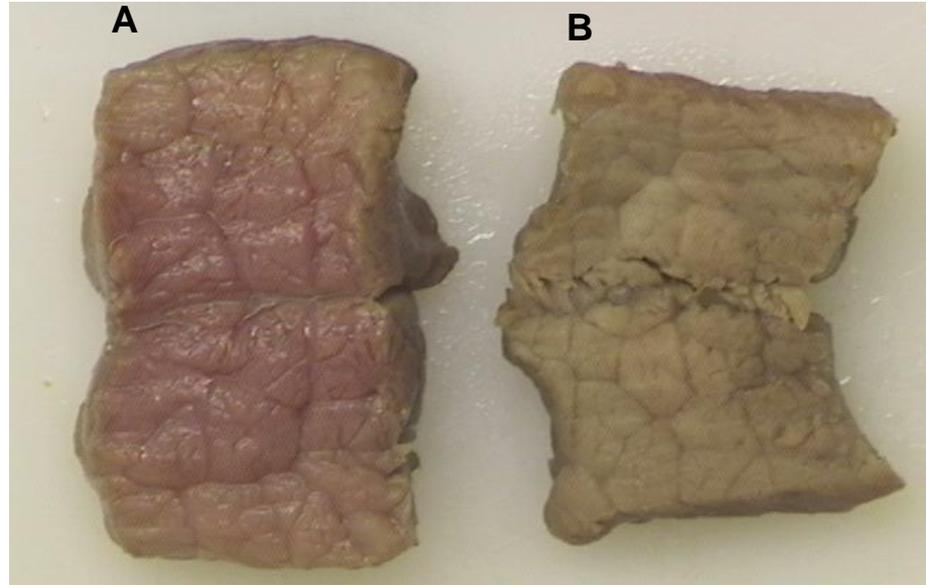
Hybrid effect

After 5 minutes samples were removed from respective solution



...and immediately bisected

Hybrid effect



CONVENT HEATING

HYBRID HEATING

Slight hardening in the outer part only

No sign of alcohol penetration and dehydration in the internal area.

The specimen was still soft

Complete dehydration/hardening in the total area, indicated by the color change

The hybrid tech stimulated the diffusion of alcohol into the inner area.

Flexible



- Whatever kind of tissues, thickness ($>8\text{mm}$).
- Any kind of fixative.
- Process blocks as required.
- Throughput: Up to 210 + 210.



Flexible

Resistance Heating



Overnight processing



Hybrid heating



Rapid processing



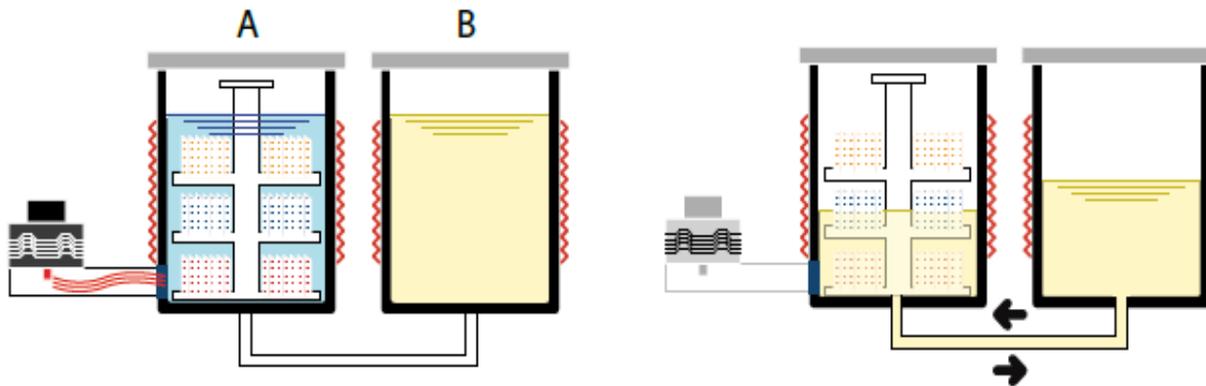
Logos efficiency

1- Rapid tissue processor



Day Operation (1)

As a fully automated, single retort, **rapid hybrid tissue processor**

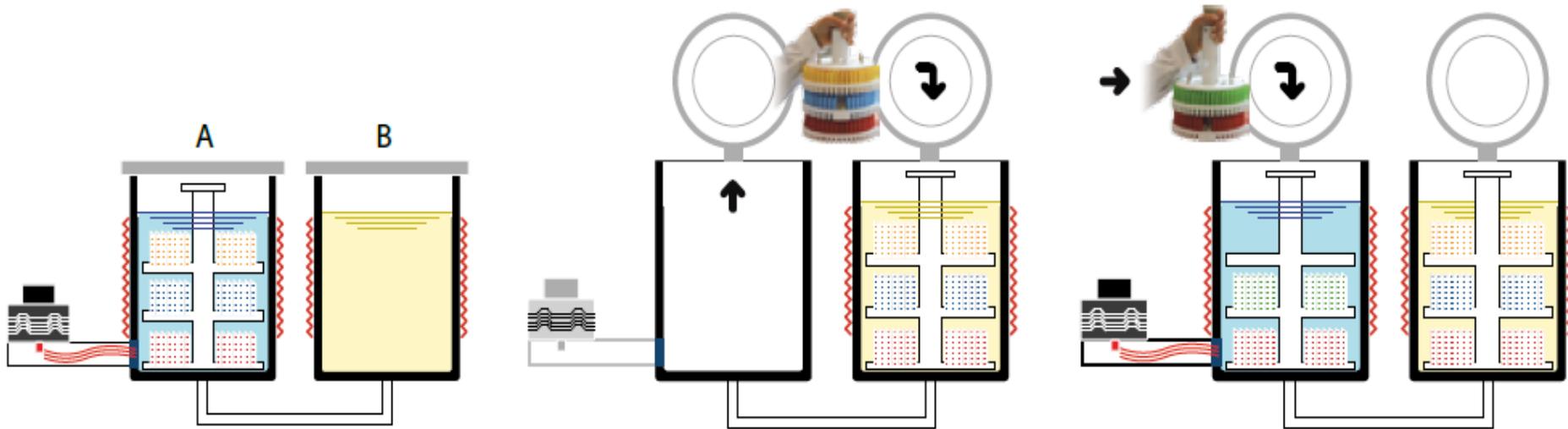


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Logos efficiency

2- Dual run

 Day Operation (2)
As a sequential, dual retort, **simultaneous batch hybrid tissue processor**



Continuous loading

No Cleaning cycle

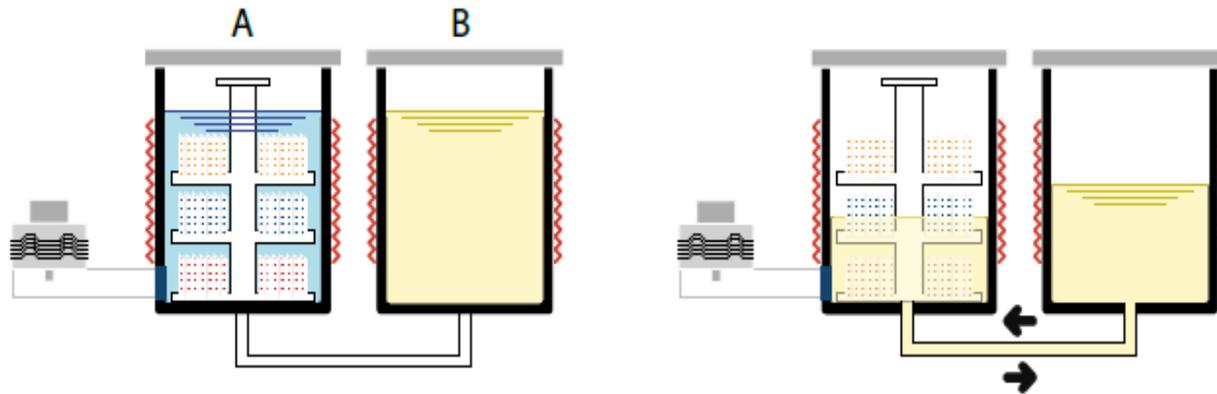
Logos efficiency

3- O/N Conventional



Night Operation

As a fully automated, single retort, **overnight conventional tissue processor**



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Fast

Unmatched processing times

Six times faster than conventional processing enabling same-day diagnosis



Specimen thickness	Workflow with rapid protocols. Fully automated	Improved workflow with parallel processing in continuous batch mode
1 mm	Full batch* every 1 h 15 minutes (including fixation)	Full batch* every 40 minutes
3 mm	Full batch* every 3 h 17 minutes (including fixation)	Full batch* every 2 hours
5 mm	Full batch* every 5 h 50 minutes (including fixation)	Full batch* every 3 hours 40 minutes

** Up to 140 cassettes with 1 gallon and up to 210 cassettes with 5 liters reagent jars*

Packed with the latest technology for improved work environment

"Soft-close" cover for enhanced safety

Heated PTFE coated internal surface to avoid condensation of reagents for consistent processing and enhanced operator safety

Swing-up control panel cover for easy access to condensation traps

Easy, safe transfer of exhausted wax through heated PTFE connector

Open system.
No proprietary reagents commitments.
Use of histology grade wax.

No transfer of reagents to tanks

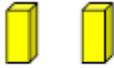
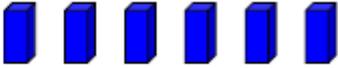
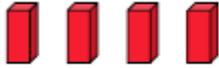
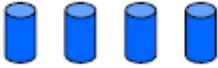
Slide-out ventilated reagent drawer. Direct transfer of solutions in processing retort from commercial jars (5 lt or 1 gal)

Safe.



Economical.

Traditional Tissue Processing: 8-12 hours

Fixation	Dehydration	Clearing	Infiltration
			



Fixation	Dehydration	Clearing	Infiltration
			



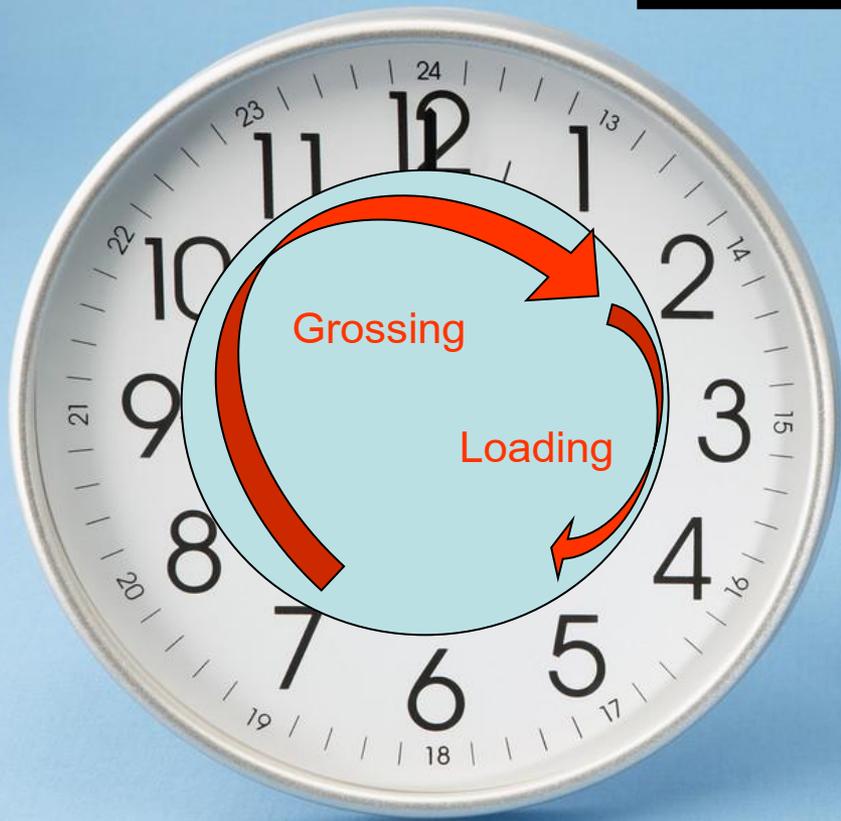
Case study: 300 cassette/24hours laboratory

Day 1



O/N Processing

Day 2

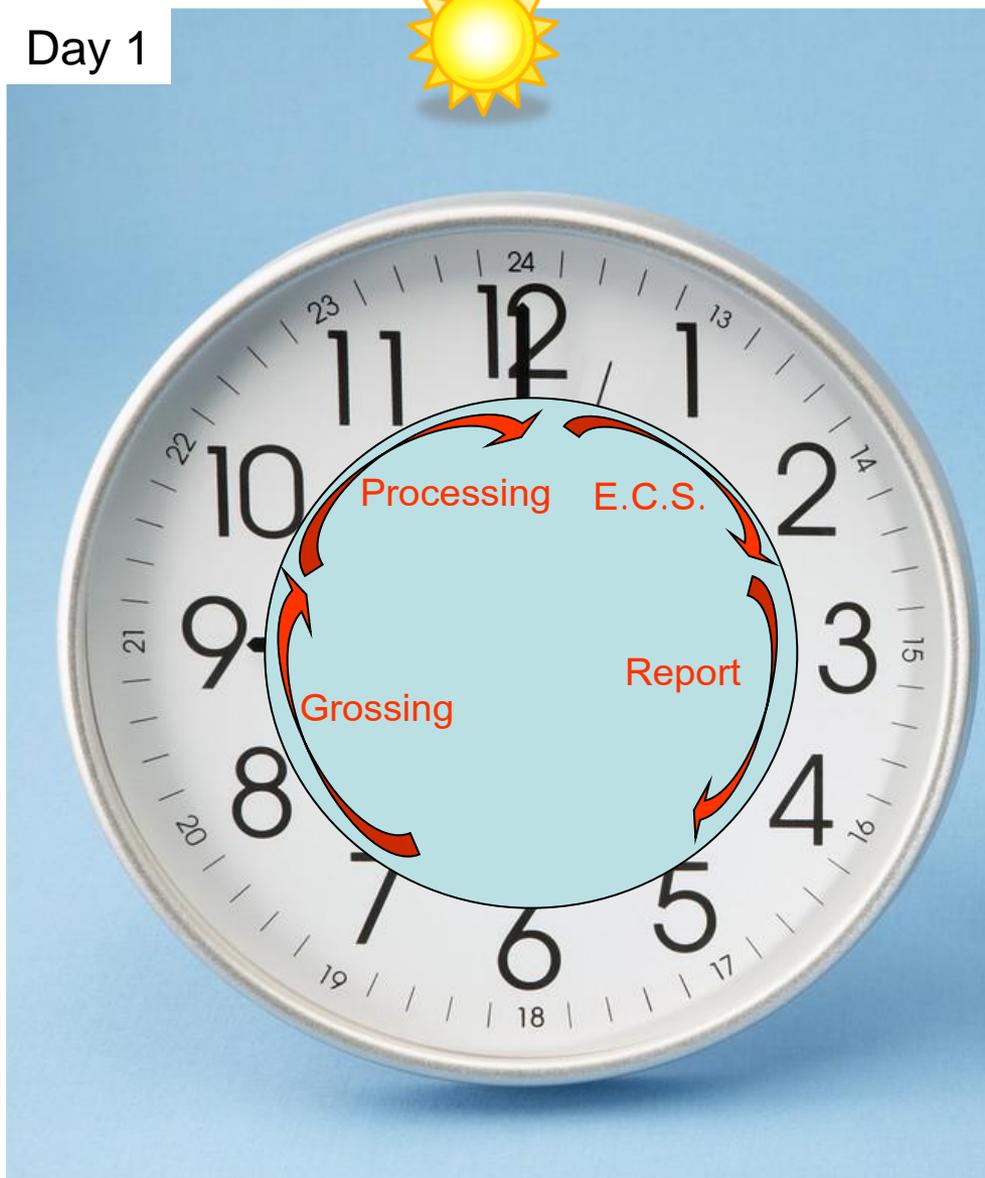


Conventional

One day delay diagnosis

Case study: 300 cassette/24hours laboratory

Day 1




O/N Processing
for large/routine
samples

Benefits

- Same-day + overnight processing in one unit
- Improved work-flow of Laboratory (reduced backlog of cassettes).
- No toxic reagents
- Reduced running cost and maintenance (no cleaning cycles)
- High quality slides



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synergyTM



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Embedding

High workload task:

Hundreds of samples to be manually embedded/positioned

Impact on laboratory workflow:

Manual Operation and Time Consuming step.

Bottleneck within the laboratory workflow.

Quality:

Dedicated personnel have to grant a correct Tissues Orientation.

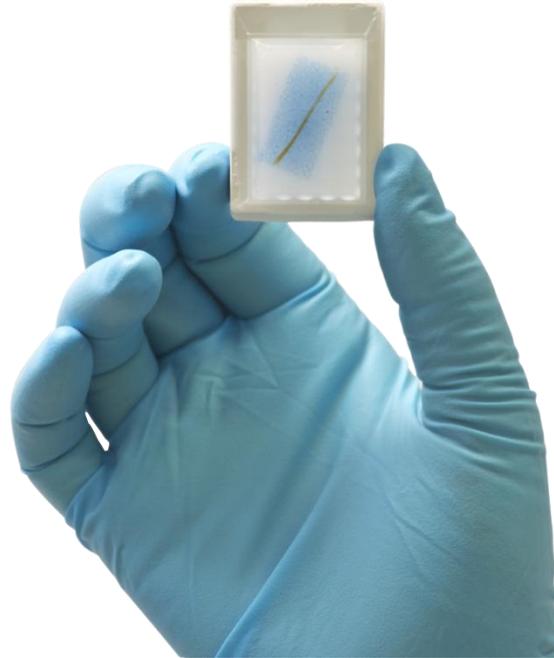
Orientation and quality may differ .

*A new era
for embedding
is starting...*



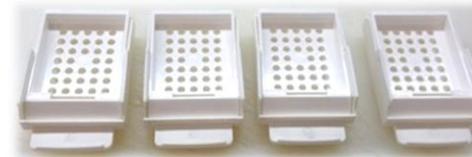
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What if embedding...



...is completed in a tissue processor?

Synergy



Special rack and dedicated accessories
for ***processing & embedding in one step***

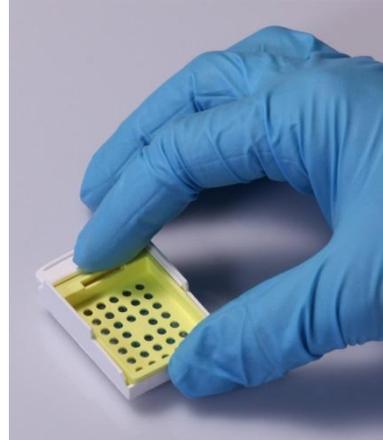


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Before tissue processing



Small biopsies positioning

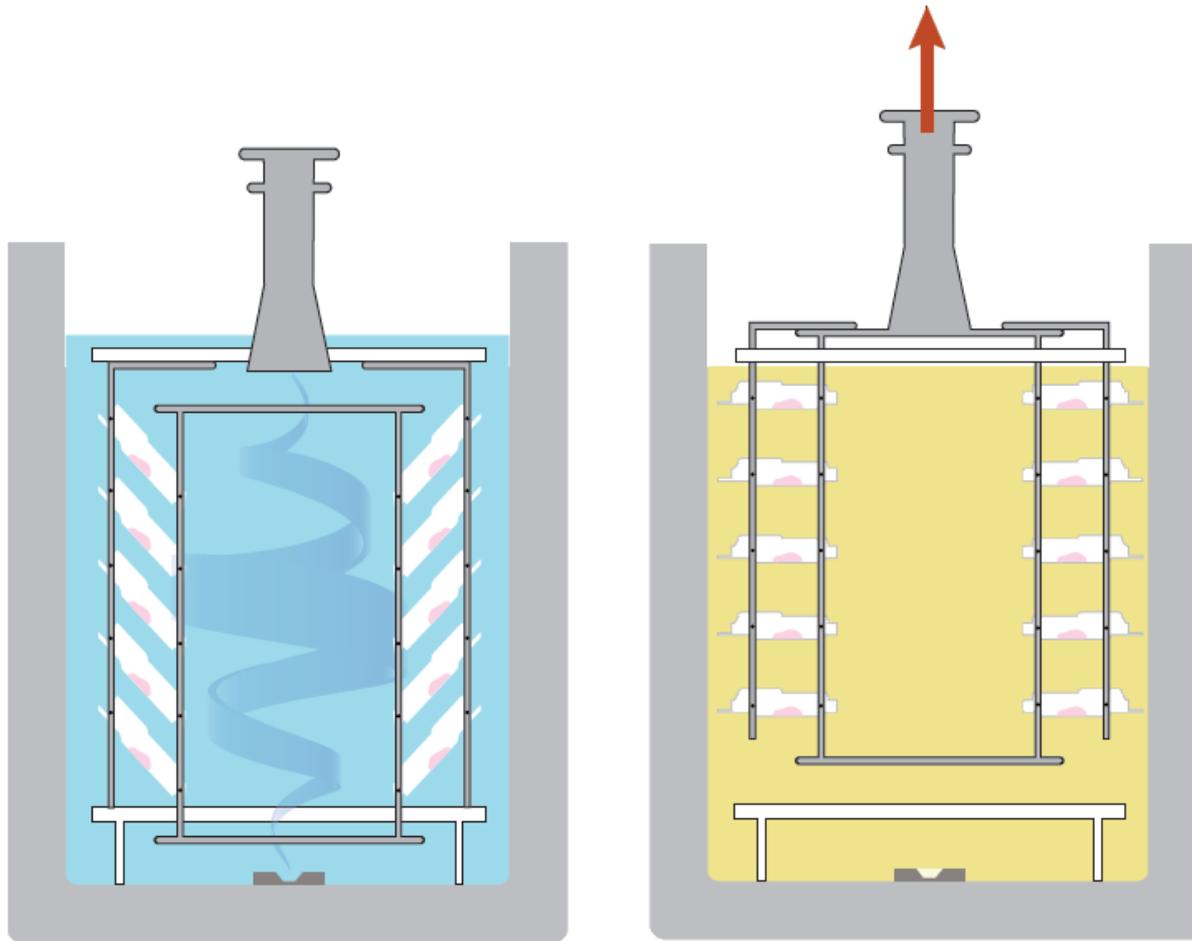


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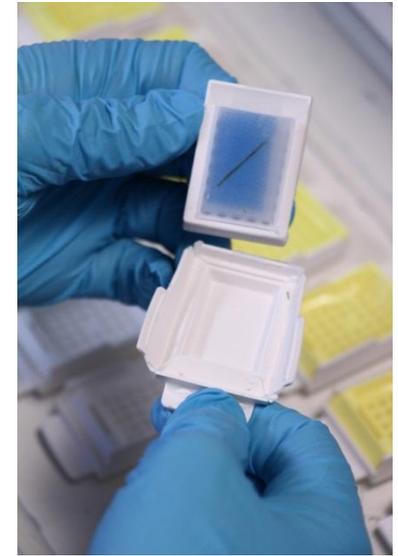


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The processing method



After tissue processing



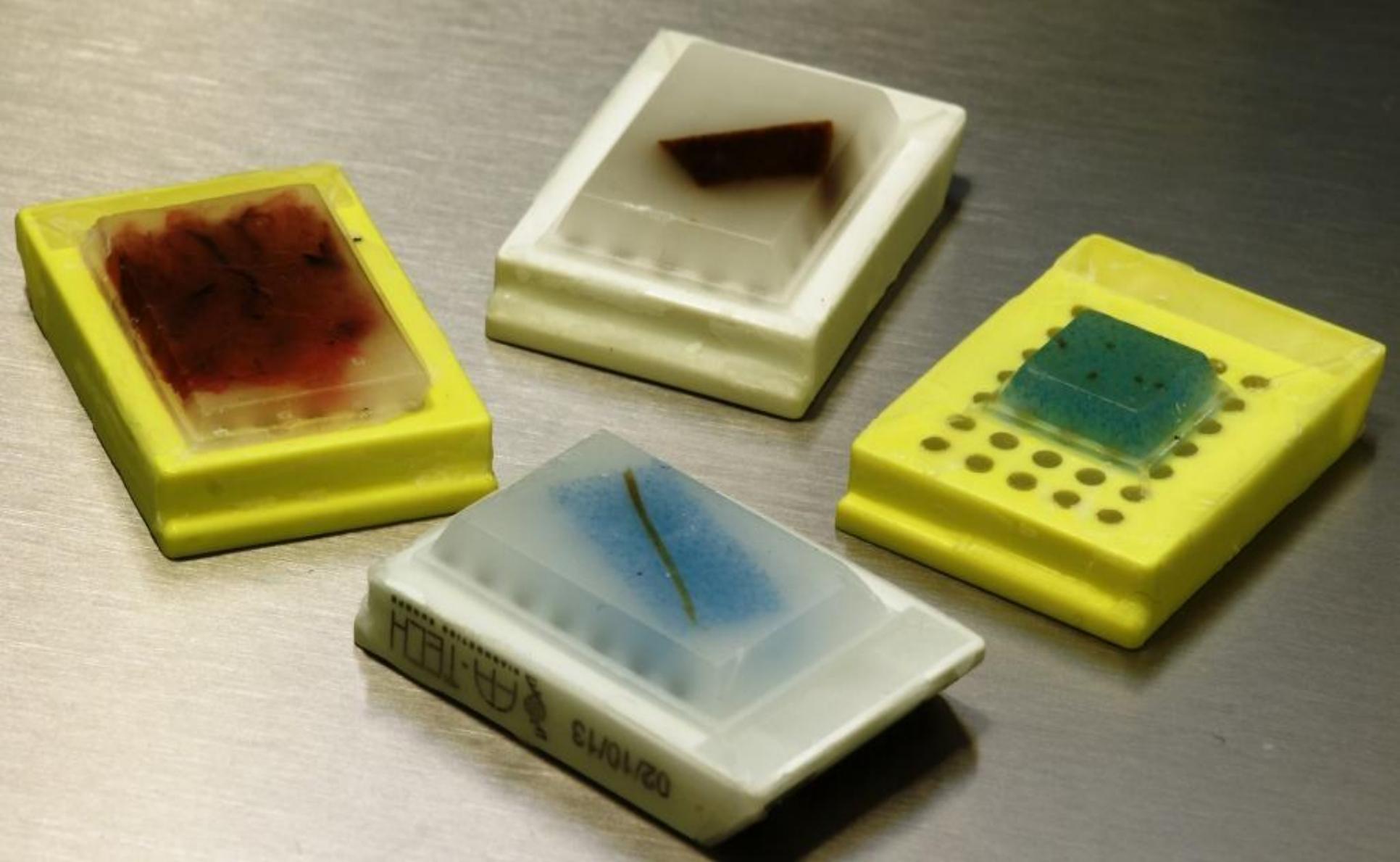
Cassette unloading
& cooling



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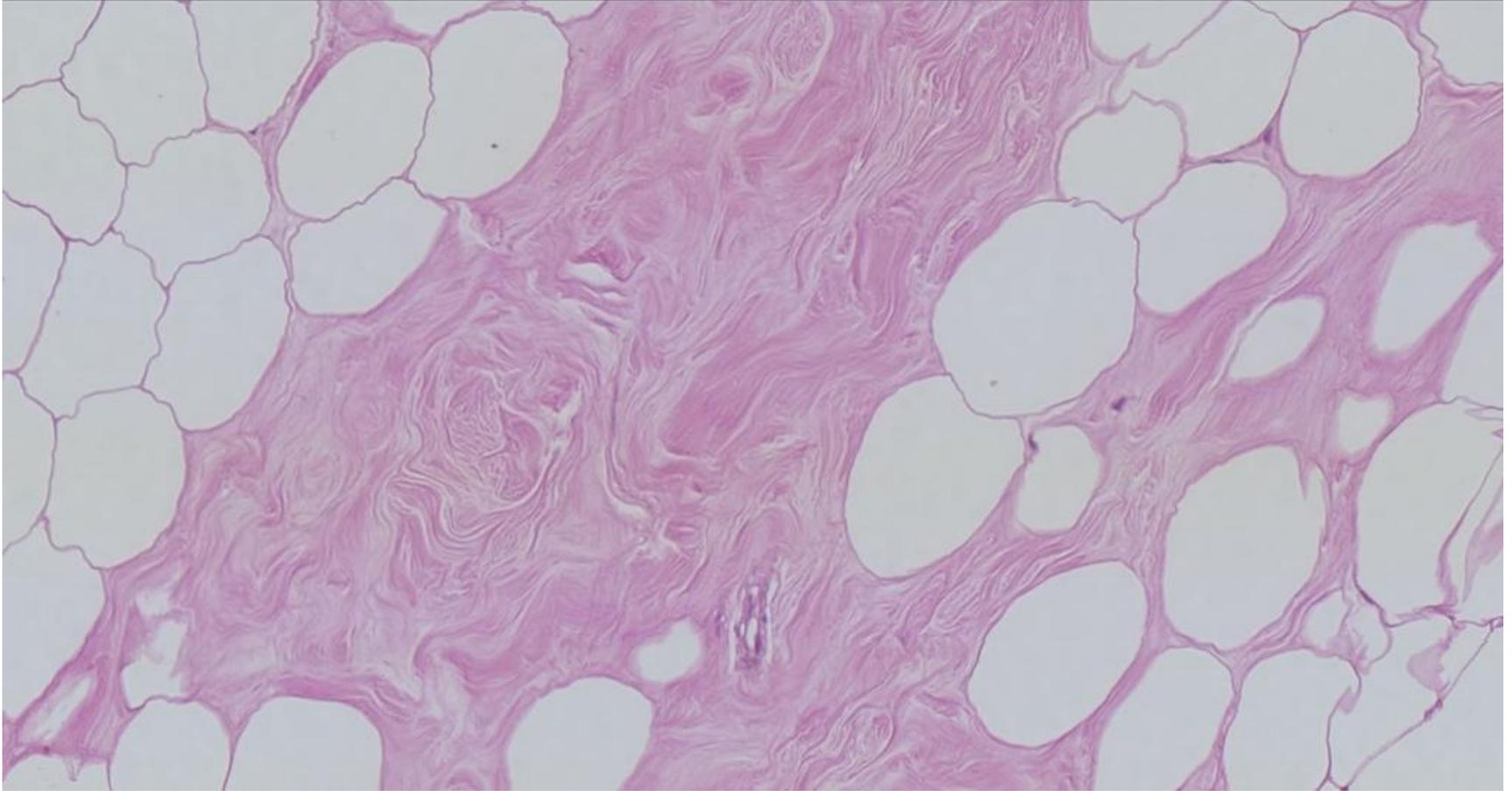


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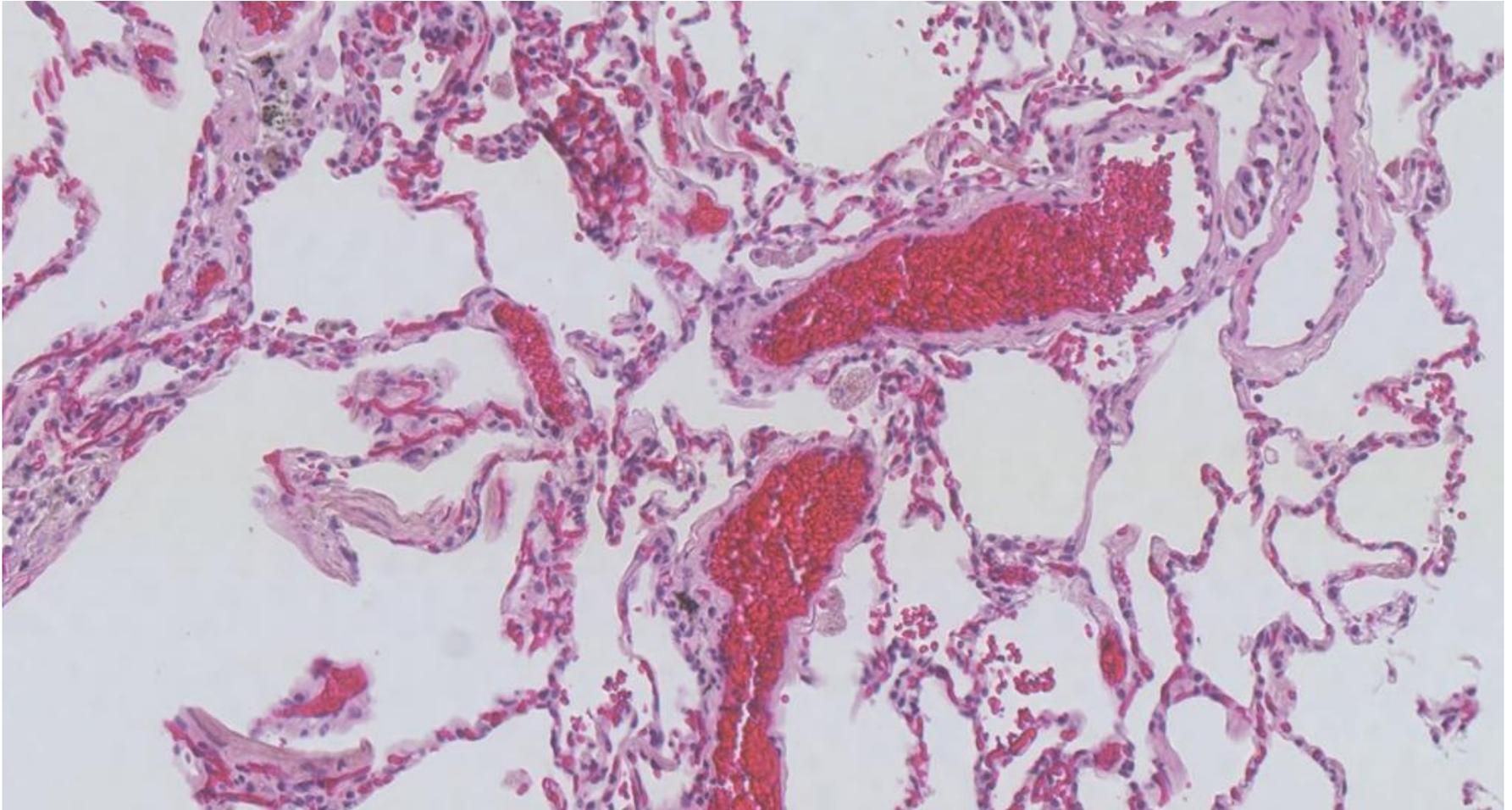


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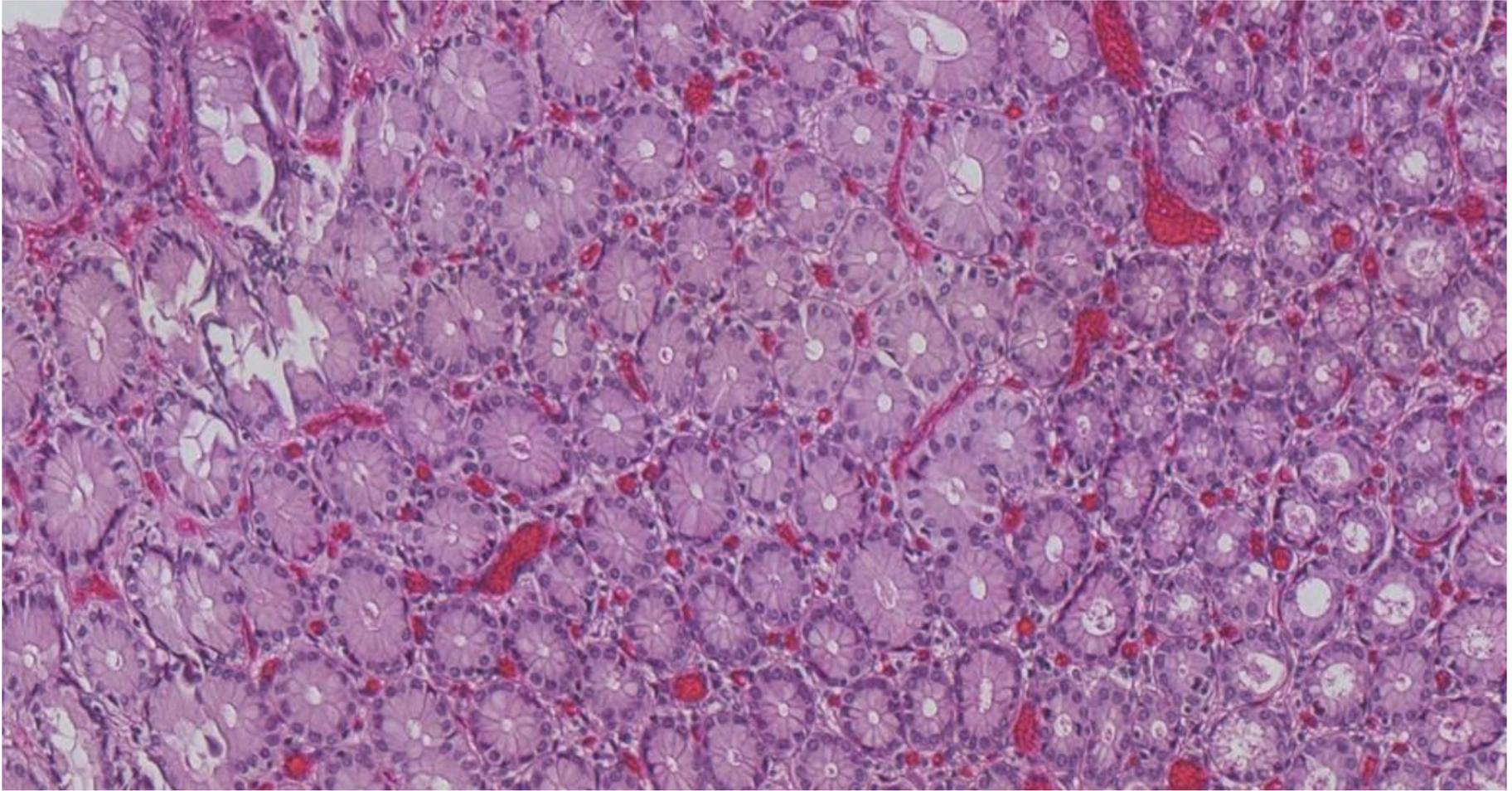
Equivalent morphology



Breast 20x, 2h program Pathos Delta, Eth-Iso



Lung 20x, 5h program Pathos Delta, Jfc-wax



Colon 20x, 5h program Pathos Delta, Jfc-wax

The Synergy benefits:

- Processing and embedding in 1 unit
- Affordable purchasing price
- Irrelevant maintenance cost

Grazie



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